Critically evaluating the Effectively Maintained Inequality hypothesis

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Abstract: This paper uses data for England to test the effectively maintained inequality (EMI) hypothesis that individuals from 'high' and 'low' socioeconomic backgrounds have qualitatively different modal educational destinations at a given educational level. In so doing, the paper highlights how a focus on modal educational destinations seriously detracts from the usefulness of the EMI hypothesis as a basis for identifying qualitative educational inequalities. First, tests of the EMI hypothesis are shown to be of questionable reliability because they involve calculating the predicted probabilities of different educational destinations based on ultimately arbitrary operationalisations of 'high' and 'low' socioeconomic background, with more polarised formulations being more likely to find in favour of EMI. Second, tests of the EMI hypothesis are shown to be of questionable validity in that it is possible to find in favour of EMI even when the degree of qualitative inequality is negligible and to find against EMI even when the degree of qualitative inequality is substantial. These limitations have been recognised by the originator of the EMI hypothesis but dismissed as unimportant. However, this paper argues that these limitations are so serious that analysts seeking to identify qualitative inequalities in education should discard the focus on modal educational destinations advocated by the EMI hypothesis.

Keywords: qualitative inequality; education; Russell Group universities

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Introduction

In an era of near-universal participation in secondary education and of near-mass participation in higher education it increasingly matters not just how much schooling people accumulate but also what kinds of schooling they receive. In England, educational expansion during the second half of the twentieth century has meant that today more than two-thirds of 16 to 18 year olds continue in post-compulsory upper secondary education (DfE 2014) and nearly half progress to higher education between the ages of 18 and 30 (BIS 2013). Increases in rates of participation in upper secondary and higher education in England have been accompanied by the development of a more differentiated post-compulsory education sector in which newer and predominantly lower status programs and institutions have emerged to stand alongside more traditional, higher status ones. In upper secondary education, the main divide in the English case is between higher status academic 'A-level' programs traditionally leading to enrolment in higher education on the one hand and lower status vocational programs intended to lead directly into employment in skilled blue-collar or lower-level white-collar occupations on the other (Archer, Hutchings and Ross 2003). Within the higher education sector, the most salient distinctions are between higher status 'Old' universities and those lower status 'New' universities incorporated since 1992, and increasingly between more academically selective and research-intensive universities such as those that make up the 'Russell Group' and the remainder (Boliver 2013). Importantly, there are marked differences in the labour market returns to different kinds of upper secondary qualifications (Vignoles et al. 2002; Hodgson and Spours 2011) and to graduating from different types of universities (Bratti et al 2004; Brown 2005; Power and Whitty 2008; Hussein, McNally and Telhaj 2009; Walker and Zhu 2013). Given these varying economic returns, it is important to investigate to what extent a person's likelihood of participating in higher status forms of education is determined by their socioeconomic background.

Prior studies for England have already demonstrated substantive and statistically significant effects of socioeconomic background on the probability of being in higher status forms of education at upper secondary level (Conlon 2002; Payne 2003) and within higher education (Robertson and Hillman

1997; Sutton Trust 2009; Zimdars et al 2009; Harris 2010; Author 2011 and 2013; Croxford and Raffe 2013; for similar findings in relation to Scotland, see also Iannelli, Gamoran and Paterson 2011). But no study to date has explored whether these social background effects conform to the pattern predicted by the effectively maintained inequality hypothesis, which posits that people from more advantaged social groups are *most likely* to be found in higher status forms of education while people from less advantaged social groups, on the contrary, are *most likely* to be found in lower status forms of education.

The effectively maintained inequality (EMI) hypothesis, developed originally by Lucas (2001) and elaborated by Lucas (2009), argues that one of the ways socioeconomically advantaged individuals maintain their advantage is by enrolling in higher rather than lower status forms of schooling whenever such status distinctions are present. This means that even when there is universal participation at a given level of education, and therefore socioeconomic inequalities in quantitative rates of participation at that level are negligible or non-existent, those from socioeconomically advantaged backgrounds are able to maintain their competitive edge by enrolling predominantly in qualitatively superior kinds of education at that level. For inequality to be counted as *effectively maintained*, however, it must be the case that those from more advantaged backgrounds are *most likely* to be found in higher prestige forms of education while those from less advantaged backgrounds are *most likely* to be found in lower prestige forms of education at that level (Lucas 2001: 1671; Lucas 2009: 485). Importantly, then, not all qualitative educational inequality constitutes effectively maintained inequality, only that which entails different modal educational destinations for people of high and low social origins. For instance, if those from socioeconomically advantaged backgrounds completely monopolise the higher status form of education such that those from less advantaged groups have no access to it whatsoever, but the socioeconomically advantaged nevertheless have the lower status type of education as their most likely educational destination, this would not count as effectively maintained inequality. Equally, if both the socioeconomically advantaged and the socioeconomically disadvantaged were most likely to be found in higher status forms of education, this would not count as effectively maintained inequality, even if the rate of enrolment in the higher status form of education was considerably higher for the socioeconomically advantaged group than for the socioeconomically disadvantaged one. It is important to be clear, then, not only that there are

other forms of qualitative inequality besides that posited by the effectively maintained inequality hypothesis, but also that these other forms of qualitative inequality could be more substantial and more consequential than the specific kind labelled effectively maintained inequality. These important caveats are returned to later in the paper.

This paper sets out to explore the extent of qualitative inequality in upper secondary and higher education in England, and, in particular, to test the central prediction of the EMI hypothesis that people from different social origins have qualitatively different modal educational destinations. The next section describes the data and methods used, and the section after that presents some empirical results including the predicted probabilities of young people from different socioeconomic backgrounds being found in the different types of upper secondary and higher education. The concluding section of the paper highlights the sensitivity of the results to the way in which 'high' and 'low' socioeconomic background is operationalised, and how a concern to establish whether modal educational destinations differ leads to other patterns of qualitative inequality being overlooked. These limitations have been acknowledged by the originator of the EMI hypothesis but dismissed as unimportant (see Lucas 2009, pages 490 and 493, respectively). This paper challenges that dismissal, arguing that the present focus of the EMI hypothesis on modal educational destinations is something of a 'red herring' which should be discarded by researchers seeking to identify qualitative inequalities in education.

Material and methods

In order to explore patterns of qualitative inequality in upper secondary and higher education in England, and in particular to test whether the effectively maintained inequality hypothesis holds in the English case, an analysis is carried out of data from the Longitudinal Study of Young People in England. The study has followed a large nationally representative sample of school students annually since 2004 when sample members were aged 13/14. Respondents' social background characteristics were measured in the first wave of the study, while information about respondents' upper secondary and higher education destinations was collected in later waves when respondents were aged 17/18 and 18/19, respectively.

The dependent variables in the analysis relate to students' educational destinations in upper secondary and higher education. More specifically, the two dependent variables analysed are:

(1) *Type of upper secondary education at age 17/18.* This variable distinguishes between students following higher status academic programs in upper secondary education (i.e. studying for A-level qualifications); those following lower status vocational upper secondary programs; and those not in an upper secondary education program at this age;

(2) *Type of higher education at age 18/19***.** This variable distinguishes between students enrolled in higher education at higher status Russell Group universities; those attending other institutions of higher education; and those not enrolled in higher education at this age.

To enable the identification and comparison of people who belong to socioeconomically advantaged and socioeconomically disadvantaged groups, four social background variables are included as independent variables in the models:

(1) *Social class,* based on father's class or mother's occupational class, whichever is the highest, when respondents were aged 13/14, coded using the 7-category version of National Statistics Socio-Economic Classification (NS-SEC). The main contrast drawn is between those with a parent employed in a higher professional or managerial occupation and those with a parent working in a routine, low-skilled job;

(2) *Parental education*, distinguishing between one or more parents with a degree or higher qualification, a higher education qualification below degree level, upper secondary qualifications (specifically A-levels), lower secondary qualifications (specifically GCSEs or O-levels), other qualifications, no qualifications, and qualifications not known. The main contrast drawn is between those whose parents are educated to degree level or better and those whose parents have lower secondary qualifications only;

(3) *Type of school* attended at age 13/14, distinguishing between having attended a private school versus a state-funded school;

(4) *Housing tenure* at age 13/14, distinguishing between those whose parents own their homes and those who live in public housing (a 'council home').

To estimate socioeconomic group differences in the likelihood of enrolling in different types of upper secondary and higher education, models for multi-category ordinal dependent variables are needed. Ordinal probit models were estimated first but diagnostic tests showed that the parallel slopes assumption was violated in models for both dependent variables (results available on request). Because of this, a generalized ordered logit model, which relaxes the parallel slopes assumption, is estimated instead using the -gologit2- command in Stata 11 (Williams 2006). The equation for the generalized ordered logit model is as follows:

$$P(Y_i > j) = \frac{\exp(\alpha_j + X_i\beta_j)}{1+[\exp(\alpha_j + X_i\beta_j)]}, \text{ j} = 1, 2, ..., \text{M} - 1$$

where M is the number of categories of the ordinal variable, in this case the three categories of upper secondary education (academic track, vocational track, and not in upper secondary education), and the three categories of higher education (Russell Group university, other university, and not in higher education).

The regression coefficients from these generalized ordered logit models are subsequently translated into predicted probabilities in order to determine whether, as the EMI hypothesis predicts, young people from socioeconomically advantaged and socioeconomically disadvantaged backgrounds differ with respect to their *most likely* educational destination. These predicted probabilities are first calculated for each measure of social background separately,[1] and then for all four social background measures considered simultaneously.

[1] When each social background measure is considered separately, the other three social background variables are set at their modal values. These modal values are listed in parentheses as follows: parental social class (lower service class); parental education (GCSEs); type of school attended at age 13/14 (state-funded school); and housing tenure (homeowners).

Results and discussion

Table 1 reports the results of a generalized ordered logit model predicting type of upper secondary education when respondents were aged 17/18. The first set of coefficients refer to the comparative chances of being in any kind of upper secondary program, academic or vocational, rather than not being in an upper secondary program at all. Here we see that social class, parental education, school type and housing tenure are all statistically significant predictors of enrolment in an upper secondary program of some kind. Clearly, continuation in upper secondary education at the end of compulsory schooling is significantly socially stratified in England. The second set of figures in Table 1 refer to the relative chances of being in an academic upper secondary program specifically, rather than a vocational program or no program at all. Again we see that all four indicators of social background – social class, parental education, school type, and housing tenure – are significant predictors of being in an academic upper secondary program. This suggests that there is qualitative as well as quantitative inequality in upper secondary education in England.

[Table 1 about here]

Table 2 reports the results of a second generalized ordered logit model, this time predicting type of higher education at age 18/19. Focusing on the first set of coefficients, we see that there are significant social class, parental education, school type and housing tenure differences in the relative chances of attending a university of some kind rather than not being in higher education at all. Turning to the second set of coefficients in Table 2, we also see large effects of social class, parental education, school type and housing tenure on the comparative chances of being enrolled in a Russell Group university rather than attending another type of university or not being in higher education at all. As with upper secondary education, these results suggest that there is qualitative as well as quantitative inequality in higher education in England.

[Table 2 about here]

Table 3 translates the coefficients from Table 1 into the predicted probabilities of participating in an academic program, a vocational program, or no program in upper secondary education for those from high and low socioeconomic backgrounds. As Table 3 shows, young people are most likely to be found in an academic program regardless of whether they are from a high or low social class background, with predicted probabilities for otherwise modal individuals of 0.63 and 0.42 respectively. Similarly, young people are most likely to be found in an academic program irrespective of whether they are from a high or a low social background as indexed by parental education (0.78 and 0.53 respectively), or school type (0.73 and 0.53) or housing tenure (0.53 and 0.38). However, in the final columns of Table 3, where all four indicators of socioeconomic background are considered at the same time, we see that those from high socioeconomic backgrounds on all four measures are overwhelmingly likely to be found in an academic program (0.92) whereas those from low socioeconomic backgrounds on all four measures are most likely to be found in a vocational program (0.38). This last set of results is consistent with the hypothesis of effectively maintained inequality in upper secondary educational programs in England.

[Table 3 about here]

Table 4 translates the coefficients from Table 2 into the predicted probabilities of attending a Russell Group university, attending some other type of university, or not being in higher education at all, for those from high and low socioeconomic backgrounds. Here we see that young people are most likely to be not in higher education at all regardless of whether they are from a high or low social background as indexed by social class (0.54 and 0.69), or parental education (0.42 and 0.58), or school type (0.50 and 0.58) or housing tenure (0.58 and 0.73). However, in the final column of Table 4, where all four indicators of socioeconomic background are considered at the same time, we see that those from high socioeconomic backgrounds with respect to social class, parental education, school type *and* housing tenure are most likely to be found in a Russell Group university (0.41). In contrast, those from low socioeconomic backgrounds on all four measures are most likely to be not in higher education at all (0.81), and if they are in higher education they are more likely to be in a non-Russell Group university (0.17). As with the findings for upper secondary education, the EMI

hypothesis is confirmed only when high and low SES are defined using all four social background measures simultaneously.

[Table 4 about here]

Conclusions

From the results presented above, it would seem that the effectively maintained hypothesis holds for both upper secondary education and higher education in England if we consider multiple indicators of socioeconomic status simultaneously. However, it is notable that neither social class nor parental education nor school type nor housing tenure alone is enough to produce the pattern predicted by the effectively maintained inequality hypothesis. On reflection this is unsurprising given that 'independent' variables are rarely independent in reality; indeed it makes good sense to consider multiple social background factors simultaneously, instead of exploring each one separately while holding all other variables constant or setting them at the sample mean. However, these findings draw attention to the fact that whether or not the EMI hypothesis is found to hold depends in part on how the analyst has chosen to operationalise 'high' and 'low' socioeconomic background. In short, formulations that define high and low socioeconomic backgrounds very narrowly and precisely as the utmost advantaged and disadvantaged in society are more likely to produce evidence in favor of the EMI hypothesis than are measures which use broader categorisations. This observation may be obvious – indeed, it is made and summarily dismissed by Lucas in a paper elaborating on the EMI hypothesis (2009: 490) – but its implications for the falsifiability of the EMI hypothesis are important given that it may not always be clear (and indeed the EMI hypothesis does not explicitly specify) where the lines should be drawn when it comes to defining the most and least advantaged groups.

The results for the English case also illustrate that patterns of qualitative inequality which do not count as effectively maintained may in fact be more substantial than those that do conform to the EMI pattern. For example, recall from Table 3 that the predicted probabilities of being in an academic program in upper secondary education are 0.63 and 0.42 for high and low social class individuals respectively; clearly this shows significant qualitative inequality even though the EMI hypothesis of

different modal destinations for more and less advantaged socioeconomic groups does not hold. . This possibility is recognised by Lucas and dismissed as unimportant (2009: 493). But imagine that the predicted probabilities had instead been 0.34 and 0.33 respectively; in this hypothetical case the EMI hypothesis would have been confirmed even though the degree of qualitative inequality is not only lower than was actually observed but is in fact negligible. Recall also, from Table 4, that the predicted probabilities of being in a Russell Group university are 0.09 and 0.04 for those from high and low social class backgrounds respectively; in this instance there is significant degree of qualitative inequality even though the EMI prediction that those from high social class backgrounds are most likely to be found in a Russell Group university does not hold. Imagine that instead the predicted probabilities had been 0.33 and 0.00 respectively; in this hypothetical case, the EMI hypothesis would still have been rejected even though the degree of qualitative inequality in this counterfactual example is so considerable that those from high social class completely monopolise Russell Group universities to the utter exclusion of those from less advantaged class origins.

As these counterfactual examples indicate, tests of the EMI hypothesis will fail *by design* to identify substantively large qualitative inequalities that do not entail different modal destinations for people from high and low socioeconomic backgrounds. Just how problematic this is can be seen in Figure 1, below, which illustrates a simplified scenario in which there are just two possible educational destinations, a top tier and a bottom tier. In Figure 1 the x-axis and y-axis refer to the probability of being in the top educational tier for those from the high socioeconomic group and the low socioeconomic group, respectively. The area below the diagonal line includes all sets of coordinates for which the probability of being in the top educational tier is higher for the high socioeconomic group than for the low socioeconomic group, i.e. where there is some degree of qualitative educational inequality, the magnitude of which is greater for sets of coordinates that lie further away from the diagonal line. Even though the entire area below the diagonal line constitutes qualitative inequality to some degree, the EMI hypothesis, because of its focus on modal educational destinations, is concerned only with the bottom right hand quadrant, labelled A in Figure 1. As such the EMI hypothesis neglects the area labelled B where qualitative educational inequality exists but neither the high nor the low socioeconomic group have the top educational tier as their modal destination, and it

neglects the area labelled C where qualitative educational inequality also exists but the top educational tier is the modal destination for both the high and the low socioeconomic group.

[Figure 1 about here]

Given that tests of the effectively maintained inequality will inevitably fail to identify substantial qualitative inequalities unless they entail different modal destinations for high and low SES groups, and given the operationalization of high and low SES groups is ultimately arbitrary, it is highly doubtful whether the EMI prediction of different modal educational destinations for different socioeconomic groups can be considered a valuable benchmark for assessing qualitative educational inequality. On the contrary, the EMI prediction of different modal destinations is something of a 'red herring' which researchers interested in detecting qualitative inequality would do well to discard.

Of course, the empirical example presented here represents just one case of a particular country at a particular point in time. Although it is clear that the EMI focus on modal destinations is unhelpful and distracting in this particular case, and that it is very likely to be so in other cases, further research is needed to confirm this using data for other countries and taking a longitudinal perspective.

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Table 1. Coefficients from a generalized ordered logit model predicting upper secondary education type

	Academic or vocational program vs. not in upper secondary education			Academic track vs. vocational program or not in upper secondary education		
	Coefficient	Std. error	p-value	Coefficient	Std. error	p-value
Social class (ref = Higher service)						
Lower service	-0.287	0.113	0.011	-0.384	0.078	0.000
Intermediate	-0.207	0.135	0.125	-0.366	0.097	0.000
Smaller employer	-0.392	0.133	0.003	-0.574	0.097	0.000
Lower supervisory	-0.694	0.133	0.000	-0.977	0.102	0.000
Semi routine	-0.445	0.132	0.001	-0.725	0.098	0.000
Routine	-0.545	0.146	0.000	-0.849	0.114	0.000
Long-term unemployed	-0.161	0.166	0.331	-0.359	0.125	0.004
Class unknown	-0.379	0.213	0.075	-0.702	0.167	0.000
Parental education (ref = Degree)						
Sub-degree higher educ.	-0.463	0.126	0.000	-0.597	0.085	0.000
Upper secondary	-0.864	0.119	0.000	-1.017	0.083	0.000
Lower secondary	-1.069	0.115	0.000	-1.146	0.080	0.000
No qualifications	-0.843	0.130	0.000	-0.790	0.094	0.000
Other/Unknown	-0.899	0.180	0.000	-0.892	0.137	0.000
School type (ref = Private school)						
State-funded school	-0.462	0.203	0.023	-0.839	0.146	0.000
Housing tenure (ref = Homeowner)						
Public rented housing	-0.482	0.067	0.000	-0.619	0.059	0.000
Private rented housing	-0.315	0.127	0.013	-0.447	0.107	0.000
Not known	-0.256	0.199	0.198	-0.281	0.162	0.083
Constant	3.228	0.218	0.000	2.501	0.156	0.000

Table 2. Coefficients from a generalized ordered logit model predicting higher education type

	Russell Group or other university vs. not in higher education			Russell Group university vs. other university or not in higher education		
	Coefficient	Std. error	p-value	Coefficient	Std. error	p-value
Parental social class (ref = Higher service)						
Lower service	-0.200	0.075	0.008	-0.409	0.100	0.000
Intermediate	-0.241	0.101	0.016	-0.361	0.157	0.021
Smaller employer	-0.401	0.103	0.000	-0.775	0.179	0.000
Lower supervisory	-0.571	0.115	0.000	-1.052	0.236	0.000
Semi routine	-0.514	0.108	0.000	-0.940	0.206	0.000
Routine	-0.660	0.133	0.000	-0.986	0.272	0.000
Long-term unemployed	-0.335	0.143	0.019	-1.129	0.327	0.001
Class unknown	-0.492	0.196	0.012	-0.593	0.345	0.085
Parental education (ref = Degree)						
Sub-degree higher educ.	-0.348	0.081	0.000	-0.709	0.116	0.000
Upper secondary	-0.523	0.083	0.000	-0.935	0.129	0.000
Lower secondary	-0.667	0.081	0.000	-1.299	0.137	0.000
No qualifications	-0.323	0.102	0.001	-0.757	0.183	0.000
Other/Unknown	-0.325	0.157	0.039	-0.892	0.275	0.000
School type (ref = Private school)						
State-funded school	-0.347	0.120	0.004	-0.653	0.137	0.000
Housing tenure (ref = Homeowner)						
Public rented housing	-0.666	0.076	0.000	-0.754	0.175	0.000
Private rented housing	-0.517	0.135	0.000	-0.174	0.245	0.477
Not known	-0.401	0.195	0.039	-0.065	0.315	0.836
Constant	0.871	0.123	0.000	-0.359	0.136	0.000

Note: Analysis includes only those who were enrolled in some form of upper secondary education at age 17/18.

Table 3. Predicted probabilities of type of upper secondary education (modal destinations are in bold type)

		Academic program	Vocational program	Not in upper secondary education
Parental social class	High	**0.63**	0.22	0.15
	Low	**0.42**	0.34	0.24
Parental education	High	**0.78**	0.14	0.08
	Low	**0.53**	0.27	0.20
School type	High	**0.73**	0.14	0.13
	Low	**0.53**	0.27	0.30
Housing tenure	High	**0.53**	0.27	0.20
	Low	**0.38**	0.34	0.28
All socioeconomic background variables	High	**0.92**	0.04	0.04
	Low	0.28	**0.38**	0.34

Note: The "High" and "Low" contrasts refer to those from higher service class versus routine manual class backgrounds; those with parents who hold bachelor's degrees versus those whose parents are educated to secondary level only; those who attended a private versus a state-funded school; and those whose parents are homeowners versus public housing tenants

Table 4. Predicted probabilities of type of higher education
(modal destinations are in bold type)

		Russell Group university	Other university	Not in higher education
Parental social class	High	0.09	0.37	**0.54**
	Low	0.04	0.27	**0.69**
Parental education	High	0.19	0.39	**0.42**
	Low	0.06	0.35	**0.58**
School type	High	0.11	0.39	**0.50**
	Low	0.06	0.35	**0.58**
Housing tenure	High	0.06	0.35	**0.58**
	Low	0.03	0.24	**0.73**
All socioeconomic background variables	High	**0.41**	0.29	0.30
	Low	0.02	0.17	**0.81**

Note: The “High” and “Low” contrasts refer to those from higher service class versus routine manual class backgrounds; those with parents who hold bachelor’s degrees versus those whose parents are educated to secondary level only; those who attended a private versus a state-funded school; and those whose parents are homeowners versus public housing tenants

Figure 1. Probabilities of being in the top rather than bottom educational tier